

# The Scientific Method

Clearly identify the *independent* and *dependent* variables, *constants*, and *control* in your experiment:

Independent variable: What the scientist changes in an experiment.

Dependent variable: The data, or the measured results of the experiment.

Constants: Also known as controlled variables. These stay the same from trial to trial.

Control: Serves as a basis for comparison in your experiment. Think: what is "normal" for the experiment ...

OBSERVATION

Make an observation of something happening in the world around you.

To be studied by scientists, it must be an observation of the natural world.

PROBLEM

This is a statement of the problem being studied.

The problem should identify both the independent variable and the dependent variable.

HYPOTHESIS

The hypothesis is an educated prediction of the results, based on research and observations.

Format for hypothesis:  
If (the IV) is changed (be specific), then the (DV) will (respond specifically), because...

EXPERIMENT

The experiment should be like a recipe, specific enough for anyone to follow.

Include:  
Materials needed  
Step-by-Step Process  
Specific data that should be collected.

DATA COLLECTION & ANALYSIS

Data includes  
\*qualitative (qualities: observations)  
\*quantitative (number)

Be sure to include:  
Data Tables  
Graphs  
Other Data

CONCLUSION

Must relate to the problem and hypothesis. The conclusion should explain the data.

Does the data support the hypothesis? Explain factors that affect the results. Suggest improvements.